

7

at one end connected to the interior side **24** of the first part and at its other end to the exterior side **16** of the second part. The flex film **32** therefore goes round the bottom end **18** of the second part when folded. When one part is rotated by approximately 360 degrees in relation to the other part, the flex film **32** thus moves such that it goes round the bottom end **20** of the first part instead. This solution therefore provides the same results as the first solution.

The phone described does not need to have two flex films. It can be provided with only one, which can be mounted as in FIGS. **5** and **6** or as in FIGS. **7** and **8**. In this case it is preferable to have one gear wheel for providing a more stable rotation. As an alternative the phone can have two flex films, one mounted as described in FIGS. **5** and **6** and one mounted as described in FIGS. **7** and **8**. When this latter solution is used, a gear will not be necessary in order to obtain stable rotation, but this is accomplished by the two flex films instead. It is of course also possible to have more flex films provided in the same way as described above. The gear does also not have to be provided as a separate wheel, but can be realised through stamping the gears into the plastic used for the casing of the half. The corresponding gaps can be provided in the same manner. There are also other variations possible. For instance the flexible electrical conductors do not have to be provided in the form of flex films, but can be in the form of cables or cords. Another possibility is to provide them in the form of insulated conducting polymers. It is furthermore not necessary to be able to rotate one half with the full approximately 360 degrees in relation to the other part to benefit from limited stress by the connection of the set of flexible conductors according to the invention, but smaller angles are also possible.

The described structure has several advantages. One is that undue stress on the set of flexible electrical conductors is limited because the flex film will not be bended or drawn in a dangerous way. The structure therefore avoids the breaking of the conductors. It is furthermore easier to replace a faulty set of flexible electrical conductors, since it is not provided within the hinge structure. The electrical conductors furthermore occupy less space in the portable electronic device than known conductors.

The hinge structure and the way it is secured in a half of the phone will now be described with reference to FIGS. **9** and **10**, where FIG. **9** shows a perspective view of half **45** of a securing mechanism and FIG. **10** a top view of the hinge **36**. The securing mechanism includes a slit **43** on both sides of which is provided a cavity **44** formed after the shape of the protrusion and is in this case has a hollow tubular shape. The slit **43** is provided at a bottom side of a half of the phone. In FIG. **9** the lower half of a slit **43** is shown and the lower half of the corresponding cavities **44**. In order to provide fastening of the hinge a corresponding upper half is provided on top of the half shown for providing the total hinge securing mechanism. The hinge **36** is in the form of a plate having two circular sections, where a protrusion **46** is provided on each side of a circular section and in the middle of such a section for defining an axis of rotation. The protrusions have tubular shape. As stated earlier the protrusion **46** associated with one circular section therefore provides one axis of rotation to be used by one half, while the protrusion associated with the other circular section provides another axis of rotation to be used by the other half. The protrusions of one section are to be provided in the cavity **44** of the securing mechanism of one half such that one circular section of the hinge is running in the slit **40** of the securing mechanism. The other circular section will be provided in a similar securing mechanism of the other half. The distance between the two axis of rotation and the posi-

8

tions of the cavities in the different halves are selected such that the bottom ends of the two halves touch or almost touch. Co-rotation round the two axis with the same angle is then also provided by the gears and corresponding gaps or the two sets of flexible conductors having opposite connection to each other.

With this structure rotation of the two parts up to approximately 360 degree is easily achieved.

Finally one major application of the present invention will be described in relation to FIGS. **11** and **12** showing another embodiment of the present invention in perspective views. Here the camera is not provided in the hinge area, i.e. at the bottom side of a half of the phone, but is rather provided inside the first half **12** such that the lens **48** thereof. Is visible on the interior side **24** of the first part **12**. When the phone is opened such that one part is rotated by approximately 180 degrees in relation to the other part, the display **28** provided on the interior side **22** of the second part **14** is provided side by side with the interior side of the first part. When the phone is in this position, it is possible to use for video conferencing such that the camera takes video shots of the user of the phone for sending to another party with which the user is communicating and the display shows video shots of the other party. Upon rotating a half to a position where it is rotated with approximately 360 degrees in relation to the other part, the two exterior sides are now facing each other, and the two interior sides are now both outwardly directed. Now the phone can be used as a camera in order to for instance take still pictures, where the display acts as a viewfinder.

The above-described embodiment thus results in a device that can be used both as a video conferencing device and as a regular camera by simply doing the appropriate rotation of the two parts in relation to each other. Naturally it can also be used as video camera in the position shown in FIG. **12** as well as be used with still pictures in the scenario of FIG. **11**. This solution enables the use of the existing camera and display in two different applications without the user having to get extra modules or plug-in devices for obtaining the same results. It is furthermore not necessary to allow full rotation to approximately 360 degrees in order to be able to have this dual use. More than 180 degrees is necessary, though. It can for instance also work when being able to rotate with at least 270 degrees. The preferred possible rotation is however by the full approximately 360 degrees.

In order to be able to stop the rotation at some wanted positions for example at 135 degrees or 180 degrees, the bottom ends can be provided with locking devices which locks the halves of the phone in the desired positions. Suitable unlocking devices can also unlock these locking positions. Such locking and unlocking devices are well known within the art and will therefore not be further described.

There are more ways in which the invention can be varied. It is for instance possible to provide more parts, which can be rotatable round any of the two described halves. Therefore the invention is only to be limited by the accompanying claims.

The invention claimed is:

1. A portable electronic device comprising:

- a first part comprising electrical circuits and having an exterior side, an interior side, and top and bottom sides;
- a second part comprising electrical circuits and having an exterior side, an interior side and top and bottom sides;
- at least one hinge connecting the bottom sides of the first and second parts to each other and allowing rotation of one of the first and second parts approximately 360 degrees relative to the other of the first and second parts;
- a first set of flexible electrical conductors connected to the first part at the exterior side adjacent the bottom side